

(11) **EP 0 632 288 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
03.07.1996 Bulletin 1996/27

(51) Int. Cl.<sup>6</sup>: **G01S 13/75, G01S 13/02**

(43) Date of publication A2:  
04.01.1995 Bulletin 1995/01

(21) Application number: **94110287.3**

(22) Date of filing: **01.07.1994**

(84) Designated Contracting States:  
**DE FR GB IT NL**

(72) Inventor: **Schuermann, Josef**  
**D-8051 Oberhummel (DE)**

(71) Applicant: **TEXAS INSTRUMENTS**  
**DEUTSCHLAND GMBH**  
**D-85356 Freising (DE)**

(74) Representative: **Schwepfinger, Karl-Heinz, Dipl.-Ing.**  
**Prinz & Partner,**  
**Manzingerweg 7**  
**D-81241 München (DE)**

(54) **Frequency diversity transponder arrangement**

(57) A method of communicating between a transponder and an interrogator. The interrogator (10) transmits a wireless RF interrogation which is received by the transponder (12). The transponder (12) then transmits a wireless RF response. The wireless RF response has a first channel response centered at frequency  $FDX1=RF+SC$ , a second channel response centered at frequency  $FDX2=RF-SC$ , and a third channel response centered at frequency  $FDX3=SC$ . The third channel response is a spurious signal resulting from using a non-linear element (32) as the transponder mod-

ulator (32,34). The interrogator (10) receives this wireless RF response. The response is received in the three channels with a first circuit (82) operable to receive said first channel response, a second circuit (86) is operable to receive said second channel response, and a third circuit (86,88) is operable to receive said third channel response. A controller (102) then selects the response from one of said first, second, or third circuits (82,86,88) for demodulating. A demodulator (100) may then demodulate one the selected channel responses. Other arrangements, systems, and methods are disclosed.

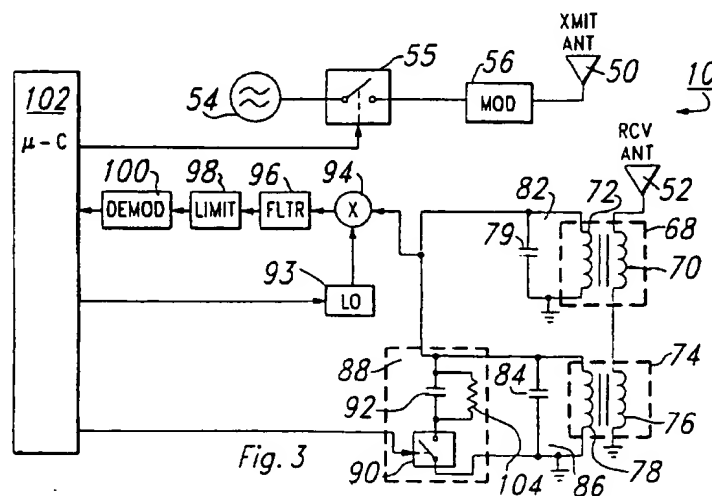


Fig. 3

EP 0 632 288 A3

European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 94 11 0287

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US-A-4 725 841 (NYSEN PAUL A ET AL) 16 February 1988 * the whole document *	1,16,17	G01S13/75 G01S13/02
A	WO-A-82 01437 (DETERRENT TECH CORP) 29 April 1982 *abstract ; fig 1 *	1,16,17	
A	WO-A-87 03698 (STIFTELSEN INST MIKROVAGS) 18 June 1987 * the whole document *	1,16,17	
D,A	EP-A-0 301 127 (TEXAS INSTRUMENTS DEUTSCHLAND) 1 February 1989	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G01S
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 May 1996	Examiner Deconinck, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 (03.91) (P04C01)